

476-1574



AF/GP-2762
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF

Paul Colin Barson et al.

SERIAL NO.: 08/888,361

FILED: July 3, 1997

FOR: Forming A Signature of Parameters
Extracted From Information -

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) Examiner: Wilbert L. Starks, Jr.
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) Group Art Unit No. 2762
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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to "Assistant Commissioner for Patents, Washington, D.C. 20231, Box: AF" on January 3, 2000.

Name of person signing Lori M. Beggs

Signature

Lori M. Beggs

RESPONSE TO FINAL OFFICE ACTION OF OCTOBER 5, 1999

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Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

This response is being submitted in view of the matters raised by the Examiner in the October 5, 1999 Office Action. At the time of submission of this paper, the Examiner has not replied to the "Letter" that was mailed to the Patent and Trademark Office on October 19, 1999, and therefore this response is being made to the Examiner's Office Action, as best as the Office Action is understood.

In paragraph 3 of the Office Action Claims 1-6, 8, 10-13, 18, 21 and 22 are rejected under 35 U.S.C. §101. This rejection is respectfully traversed for the reasons explained below.

The Examiner states on page 3, paragraph 2 of the Office Action that the Applicants' "...detecting of anomalies in the transmission of messages by an entity..." is not concrete or tangible and that the claimed invention remains at the level of abstraction of an abstract idea or

a logical algorithm. However, it is respectfully submitted that "...detecting of anomalies in the transmission of messages by an entity..." is concrete and tangible. In *State Street Bank*, the claimed invention specified a method of transforming data, representing discrete dollar amounts, to produce a final share price. This was held to be a practical application of a mathematical algorithm because it produced a useful, concrete and tangible result which was a final share price. It is submitted that "detecting anomalies in the transmission of messages by an entity" is a practical application of a method which produces a useful result, of derived anomalies, which are at least as useful, concrete and tangible as a share price or dollar amount.

As well as this the Applicants' "...detecting of anomalies in the transmission of messages by an entity..." is not the only "contribution" in the claim. This means that even if the Examiner's statement that "...detecting of anomalies in the transmission of messages by an entity..." is not concrete or tangible is correct, then this does not conclusively show that Claim 1 does not meet the requirements of 35 U.S.C. §101.

On page 3, paragraph 2 of the Office Action the Examiner goes on to state that the claimed invention is analogous to the principles in Shannon information theory. However, this is respectfully traversed because the independent claims of the present application relate to a method for detecting anomalies that is practically applied to situations involving transmission of messages by an entity. That is, the claims of the present application do not specify a theory or principle that can be carried out by thought alone and which is abstracted from any particular practical application. The Examiner also states that the Applicants' invention is disclosed abstractly from any limitations to practical applications. However, this is not the case because the independent claims are limited to the practical application of detecting anomalies in the transmission of messages by an entity. Also, the invention of the present application is disclosed in the specification with respect to specific examples which are practical applications of a method,

for example, detection of potentially fraudulent transmission of mobile telephone messages (see page 2 paragraph 2, page 36 paragraph 2, page 43 paragraph 3 and page 52 of the present application).

On page 4 of the Office Action, the Examiner relies on *In re Warmerdam*. However, the situation of *In re Warmerdam* is not closely analogous to that of the present application and it is therefore argued that *In re Warmerdam* is not pertinent to the present application. In the case of *In re Warmerdam*, the claimed process for a robotic collision avoidance system differs from the claims of the present application because the Warmerdam claims related to generating a data structure, not to using specific signatures to determine anomalies in real, tangible, transmitted, messages.

The Examiner also states that the Applicants' detected "anomalies in the transmission of messages by an entity" is an abstract idea as set out in *AT&T Corp v Excel Communications, Inc.* The Applicants point out that detected "anomalies in the transmission of messages by an entity" is not the "contribution" of the independent claims and does not summarize the Applicants' invention. It is submitted that the claimed method of the present application is similar to that of AT&T as discussed in more detail below.

On page 5 of the Office Action, the Examiner states that an anomaly is an abstract idea. However, on this basis, a discrete dollar amount or a share price would also be an abstract idea. This must be incorrect because the court held in *State Street* that discrete dollar amounts and share prices were useful, concrete and tangible results.

On page 6 paragraph 1 of the Office Action the Examiner states that the Applicants do not specify the associated practical application with the kind of specificity the Federal Circuit used in *State Street*. In the Applicants' opinion the present application does detail the associated practical application with the kind of specificity the Federal Circuit used in *State Street*. The present

application discloses specific examples which are practical applications of the claimed method and references to places in the text which give these examples is given above.

On page 6 last paragraph of the Office Action, the Examiner again relies on *In re Warmerdam*. However, it is submitted that this case is not relevant to the present application for the reasons already given above. The Applicants agree that *In re Warmerdam* is not inconsistent with *State Street*, although the Applicants submit that these two cases relate to completely different types of claims.

On page 7 last paragraph, the Examiner states that the present invention is merely the manipulation of ideas. The Applicants deny this. The invention of the present application is a practical application as evidenced by the examples of detecting fraudulent telephone calls described in the specification. It is submitted that all inventions stem from or can be abstracted back to "ideas" or "manipulation of ideas" but that in the present application, practical factors are incorporated in order to create practical implementations of ideas, for example, to detect potentially fraudulent telephone messages. This is a practical, concrete application.

On page 7 the Examiner discusses the case of *AT&T Corp v Excel Communications, Inc.* In that case, the court rejected Excel's contention that AT&T's process claims were not patentable subject matter because they lacked physical limitations or were directed to a simple mathematical principle. AT&T's claims were held to be patentable. These claims were directed to a method for use in a telecommunications system which comprised generating a message record including a primary interexchange carrier indicator. AT&T's claimed process employed subscribers' and call recipients' PICs as data, applied Boolean algebra to those data to determine the value of the PIC indicator and applied that value through switching and recording mechanisms to create a signal useful for billing purposes. Although AT&T's claimed method involved using a simple mathematical principle to derive the PIC value, AT&T did not claim the Boolean

principle as such or attempt to forestall its use in any other application. It is submitted that by parity of reasoning, the claims of the present application are also patentable. The claimed method of the present invention uses an algorithm or method to create two signatures and update these using a weighted averaging in order to detect anomalies in the transmission of messages by an entity. It is clear from the specification as a whole that no claim to a weighted averaging principle per se is made and no attempt to forestall use of weighted averaging in other applications (i.e. not detecting anomalies in the transmission of messages by an entity) is made. AT&T's claimed process produced a PIC indicator which represented information about the call recipient's PIC and this was held to be a useful, non-abstract result that facilitated differential billing of long-distance calls. This is similar to the claimed method of the present application in which anomalies in the transmission of messages by an entity are derived which facilitate detection of potentially fraudulent telephone calls, for example.

On page 9, in the section headed "Argument A" the Examiner rejects claims 1 to 7 and 12 as being obvious from Peterson et al. and Hunt et al. This rejection is respectfully traversed for the following reasons.

As explained in the Applicants' response of 26 July 1999 to the first Office Action, the present application deals with the problem of detecting anomalies in data that contains information both about macro behavior such as long term trends and micro behavior such as short term fluctuations (see page 4 paragraph 2 of the present application). This problem is solved by creating two signatures, one for a long period of time and one for a shorter period of time (page 44 of the specification) and then updating these using a weighted averaging (page 45 of the specification) and specified in the independent claims of the present application.

Neither Hunt et al nor Peterson et al describes a method of detecting anomalies in the transmission of messages by an entity as specified in the independent claims of the present

application. Rather Hunt et al describe a voice recognition system and Peterson et al describe a neural network system for recognition and synthesis. Because of this a person of ordinary skill in the art would not have considered these references when seeking to detect anomalies.

On page 11 of the Office Action, in the paragraph headed "Argument C" the Examiner states that Peterson et al address the problem of dealing with both macro and micro behavior in data because Peterson et al use a time averaged feature vector. This argument is respectfully traversed. The process of calculating an average value of a parameter that varies over time may be used for many different purposes, for example, to "remove" unwanted variation in a signal due to noise. Therefore, the fact that Peterson et al use a time averaging circuit 178 does not necessarily mean that they are addressing the problem of macro and micro behavior in data. Indeed Peterson do not state this as a reason for using a time averaging circuit 178. On the contrary, Peterson et al explain that the time averaging circuit 178 limits the rate of change of confidence layer 60 between a novel and confidence state (column 10 lines 66 to 68) and filters the instantaneous variation in the output signal of neuron 176 (column 10 line 59 to 61). This indicates that the time averaging circuit 178 of Peterson et al does not perform the function of dealing with macro and micro behavior in data. Because Peterson et al do not address the problem of dealing with both macro and micro behavior in data the person of ordinary skill in the art would not have considered Peterson et al.

Even if Peterson et al were to describe dealing with macro and micro behavior in data, Peterson et al do not describe creating two signatures, one over a longer period of time than the other and then updating these using a weighted averaging. This also applies to Hunt et al. Therefore the present invention, as specified in the independent claims, is not reached by combining the teachings of Hunt et al and Peterson et al.

The Applicants' paragraph on page 9 paragraph 2 of the response of 26 July 1999 is

intended to point out the different nature of the system described in Peterson et al as compared with the present application. The argument that Peterson et al uses a self organizing map was intended to illustrate the differences between Peterson et al and the present invention and to illustrate how these documents are directed to systems of a very different nature and complexity. These arguments are maintained and provide reasons why a person of ordinary skill in the art would not have considered Peterson et al when seeking to address the problems of the present invention.

On page 10, in the section headed "Argument B" the Examiner states that Hunt et al uses a neural network because the equation at column 9 lines 28 to 46 of Hunt is the same as an equation disclosed in Korn, Granino A., "Neural Networks and Fuzzy-Logic Control on Computers and Workstations", MIT Press, Cambridge, Mass., 1995, page 14. However, it is respectfully submitted that the equation at column 9 line 31 of Hunt et al does not describe a neural network. Hunt et al specify that the voice recognition algorithm 48 of their system uses a statistical recognition strategy (column 6 lines 45 to 48). A statistical recognition strategy is not a neural network. Also, the Examiner accepts that Hunt et al do not mention the term "neural network". The equation at column 9 line 31 of Hunt et al is part of a verifier routine in which digits of a spoken password are compared with reference data vectors that are stored in a database 55. This method involves computing a weighted Euclidean distance for each digit and then combining these distance values to form a single ensemble distance value. This method does not involve inputting data to a neural network and it is respectfully submitted that no clear and unmistakable direction to use a neural network is given.

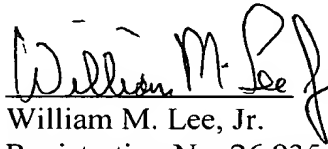
On page 11 of the Office Action, under the heading "Argument E" the Examiner states that Peterson et al describes predictive modeling. While it is accepted that Peterson et al mentions prediction, it is submitted that the Peterson reference, taken as a whole, is directed to recognition

and synthesis, for example of voice or vision signals (see figure 2 and column 19 lines 38 to 45). This involves, for example, recognizing words or line segments. This differs from use of neural networks to predict or forecast future values of time series of data as in the present application. This illustrates the general contrast in nature and direction between the system described in Peterson et al and that of the present invention.

For the reasons given above it is respectfully submitted that the independent claims are not obvious and that the remaining claims are allowable by virtue of their dependency. Further and favorable reconsideration are therefore urged.

January 3, 2000

Respectfully submitted,

A handwritten signature in black ink, appearing to read "William M. Lee, Jr.", with a stylized flourish at the end.

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